

SCIENTIFIC TEMPER

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Activist of MANS

In 1970 I obtained my MBBS degree. Till 1982 I ran a hospital and two clinics. In 1982 I closed both my clinics and hospital and since then I am working as a full time activist of the Andhashraddha Nirmoolan movement. At the time I quit my full time and successful career as a doctor, and became a full time activist of the Andhashraddha Nirmoolan movement, people asked me a question, which they still continue to ask - Doctor, for doing the work of fighting blind faith and superstitions, was it really necessary to shut down and quit your successful profession? The answer is - Yes, it was, and is, necessary. Why is it necessary? Take note- if a candle is lit in a dark hall, it brightens the room, if, instead, a petromax is lit, the hall brightens further, a tube-light spreads even more light, and if day dawns, the sun rises, and the rays of sunlight come in from all directions, that dispels the darkness. In the same measure that light enters, so also, does darkness retreat. 'In human society, with the advance of the enlightenment provided by education and science, the darkness of blind faith and ignorance is in the same measure eliminated. It is not necessary to do anything more' – perhaps this kind of belief might be present in the minds of the questioners. If it really happened like this, I would be the happiest person.

Superstitions

But what is the reality? I will give just two examples. The first railway train in India ran from Mumbai to Thane in 1853. Till that time, it had never occurred to people in our country that it is possible to transport hundreds of persons from here to there, in a single vehicle, without the use of horse, bull, elephant or animal power. At that time, rhymes like

“Sahebacha pora layi akli ra... Bin bailachi gaadi kashi hakli ra ?”) – “The Saheb’s son is really smart, dear. See how he drove the bullockless cart, dear”, were recited in schools. At that time travel from Thane to Mumbai by bullock cart would take 24 hours. By comparison, the railway was a very important and useful convenience. To start with, there was no ticket for the journey. Instead, initially, the Sahebs would pay the passengers one rupee to make the journey. This is because people were just not willing to sit in the train. They thought of the train as some kind of witchcraft. “The whites will take us to Mumbai in the train. There, they are constructing buildings. They will kill us and bury us in the foundations of these buildings. People, beware, don’t enter the train”- such declarations were issued at the time. So that people would be willing to sit in the train, they were paid one rupee. At that time one rupee was certainly a large sum of money. And when people slowly started to board the train, the reward was reduced to 8 annas. Then it became four annas. Next, travel was made free and after that they started charging for the ticket to travel in the train. But since the train was still considered a kind of black magic, before the train embarked from Thane to Mumbai, or from Mumbai for Thane, wives would come and apply haldi-kumkum to the engine, and tie lemons and chillies, or an upside down doll.

When I narrate this I see a smile on some of your faces. But tell me truly, even today when we first bring a two-wheeler, or a four wheeler, to our homes, don’t we also do the same thing ? This means that we are ready to take the benefits of science, but not its vision. We acquire the products of science, but not the scientific attitude. Some time back

we took a survey of twenty thousand rickshaws in Pune. Every new moon a lemon and black doll is hung on 18000 rickshaws. Now everyone knows that lemon is a very good source of nutritious vitamin C. We face many deficiencies of nutrition in our country. Yet, every month we waste the nutritive elements of 18000 limes ! Do we ever ask ourselves - what are the 150 year old things that we have retained ? We do not wear the clothes of 150 years back. We do not eat the foods of 150 years back. We do not receive the education of 150 years back, we do not use the vehicles of 150 years back. But then, why do we retain the lemon -chillies and black dolls of 150 years back ? We keep these because we may have learned to use science, but we just have not learned the scientific attitude. But it is indeed necessary to take these matters more seriously than we realize.

I give you one example from our movement. Recently Satya Saibaba passed away. Satya Saibaba used to pronounce- "My miracle is my visiting card". The almighty has given me the power of miracles, so that you will be convinced that I was sent by Him for your upliftment. So if you went to visit Satya Saibaba, he would wave his hand in the air, produce and place holy ash on your palm ; wave his hand in the air, produce and place a gold or silver ring- and there are stories of his waving his hand and gifting gold locket and diamond necklaces to those visiting him. What is worth noting is that, if some ordinary person like you and I went to see him, they got holy ash. If it was an MLA or a member of parliament, he got a gold or silver ring. A President, or Prime Minister, or rich industrialist went to meet him, and their children got a gold chain. So even the Baba gave to each according to his

worth. What we were worth is holy ash, but holy ash is, after all, ash. When it came from the hands of the Baba, so it became 'Vibhooti', or 'Angaara'. So be it ! So, this Satya Saibaba was to come to Chakur in Latur district, where a huge temple was being built for him, while he was still alive.

At that time, we were conducting a campaign against superstition and fraud in Latur. I was visiting schools and colleges to say what I am saying here today, to deliver similar public lectures. The day when Satya Saibaba came to Chakur was also the first day of the Maharashtra Assembly. To tell the truth, on that day it was very necessary for the Chief Minister Shri Vilasrao Deshmukh, to be present in the Assembly, but instead, he came to Chakur to take a darshan of Satya Saibaba. There was a huge congregation of people. Our team was going to hold a demonstration. So, 48 hours earlier, in Latur, Beed and Nanded, the police detained all our activists. The programme commenced and Satya Saibaba began his speech. Five minutes after commencing his speech, he suddenly paused. He waved his left hand in the air, and produced a golden chain, which he presented to the Chief Minister's younger brother Diliprao Deshmukh. (Till today, he wears it around his neck). Again he resumed his speech for another twenty minutes, and again he suddenly paused. He waved his right hand in the air, and produced another gold chain, which he presented to the Chief Minister Vilasrao Deshmukh. (Even today, it adorns his neck). And as he was concluding his speech Baba waved his hand and produced ashes, which he distributed amongst the women and men

gathered there. What we had been saying, this was witnessed first hand, ('Yaachi dehi, yaachi dola ') by all the people gathered there.

The battle against blind faith and superstition

I have written about this story which I have just narrated to you in my book "The battle against blind faith and superstition" (Ladhe Andhashraddheche). But the real joke is ahead. I once received a letter from Shri Patel- the Culture Secretary of the State of Maharashtra. What did it say ? – " We are pleased to inform you that your book "Ladhe Andhashraddheche" has been selected by the Government of Maharashtra for the award of the 'Krantisinh Nana Patil' prize for outstanding literature. You are requested to come to Aurangabad on 25th November for the receipt of the award at the hands of the Chief Minister Shri Vilasrao Deshmukh. My reply to the Chief Minister is published in my book "Aise Kaise Zhale Bhondhu". In that letter, along with many other things, I have written this important line – " I do not wish to receive the award from the hands of a Chief Minister who does not conduct himself according to our Indian Constitution."

Now I am not so arrogant an activist to tell someone who wants to praise me - "Get lost, I will not be praised by you". Why did I write this letter ? The reason is that in the Constitution that was given to me on the 25th of January 1950, there were enunciated only my rights as a citizen. I have the freedom of movement. I can go anywhere in the country. I have freedom of expression, I can say what I wish. I have the right to own property. I can buy property. But just as, in a home, when a child has grown up and we tell him, you have your rights, but now you

will also have to take responsibilities, in the same way, in 1976 the Constitution was expanded and citizens' duties were added. One of these fundamental duties is – “ It is a duty of every Indian citizen to promote scientific temper.” This means it is the responsibility of every Indian citizen to adopt, think, propagate and nurture a scientific outlook. Mind you, it is not asked of citizens, whether or not they should adopt, promote, nurture a scientific outlook. It is their duty. Not just that, in 1987, the nation adopted a New Education Policy. In this education policy, one of the important core objectives is defined as ‘development of a scientific attitude’. Value education is taught in Maharashtra. ‘Nurturing scientific outlook’ is also included as an objective in school-level value education.

Scientific age

We live in a scientific age. From the time we wake till the time we sleep at night there is not a single thing that we can do without the help of science. We wake up, take a toothbrush, apply toothpaste, and turn on the tap at the washbasin. Take note- none of these things were available in Maharashtra a hundred years back. There were no toothbrushes, no tooth paste and no washbasins. At that time you would have to use a twig from a tree and water from a well. And many of you may have a degree in science. And after telling you all this at this university in Maharashtra, I will ask a simple question and wait for ten seconds. Anyone may answer the question. The question is - number one : the importance of scientific temper is stated in our constitution. Number two- ‘developing scientific mindset’ is mentioned

as a core objective in our national education policy. Number three- 'scientific outlook' has been included in value education. Number four- 'scientific temper is the foundation of the scientific age in which you live. And number five, the philosophic foundation of the science education that you have received is the scientific temper.

So, can anyone tell me, in one word, what is this, so important, 'scientific temper'? Like, in school, we are asked to write synonyms of words. If asked 'aqua', we write 'water'. If asked 'sun', we write 'sol'. If the word is 'luna', we write the synonym 'moon'. So, listening to my speech, think for a moment and write a synonym for 'scientific temper'. My experience is that in 99 percent of the universities in Maharashtra, 99 percent of the time, there is no answer to my question, and if there is an answer, it is incorrect. In short, 'scientific temper' means, to 'investigate causes and effects', it means 'rational causality'. Number one - behind every phenomenon, there are causes. Number two – my intelligence can comprehend these causes. Number three- though we do not today know the causes of every phenomenon in the world, but whenever and however they will be understood, I also can understand how they will be understood because of rational causality, and Number four- this is the most reliable way known to mankind of gaining authentic knowledge. Until humankind acquired scientific temper, humans were only another weak species in nature. ' Behind whatever happens in my life, there is God, there is destiny, there is fate, there is accumulated indulgence, there is karmic consequence, the sins of past lives, the time of my birth- as long as humankind was unaware of rational causation, these were various kinds of beliefs held by humans.

Then we humans discovered rational causality, and went from being dominated to becoming independent, from being subject, to becoming free. And mind you, this was an extremely important and extremely exciting event in the history of humankind. Have we ever thought specifically about the consequences of the fact that humans are among the weakest of the animals that came into being on this earth. Humans cannot fly in the air like even a small sparrow. Humans cannot live 24 hours in water like fish. In a race between a human and a deer, the deer will run three times as fast. This is because the muscles in the legs of a deer are three times as strong as human muscles. Nature has endowed the elephant and the rhino with unmatched strength. Nobody crosses their path. The lion and tiger have sharp teeth and sharp claws. That is why they can catch, tear and chew up raw meat. Humans cannot do this. Humans shiver in the cold, but nature has endowed the bear with a warm hairy coat. That is why it can live happily in even the arctic regions. We cannot see in the dark and need the help of a battery torch, while kittens can navigate in the dark. Even baby monkeys can leap from one branch to another- this is not possible for us humans. If, at home you enthusiastically lift a cute three month old baby, an elderly women in the house will sternly tell you, you may lift the child, but keep your hand under his neck as a support. A three month old human child cannot lift his head, but a bull can butt at the age of three months. Many of us may have seen a newborn calf. A newborn calf learns to stand upright on its legs in just 12 hours, while a newborn human cannot do this after 12 hours, not after twelve days, not after twelve weeks, and when he does this after twelve months we

clap our hands and exclaim- “ Look, baby is standing !”. So, we have to think about this- how did this weak animal called a ‘human’ become the lord of all nature ? People say – “he became lord of all things because he started to use his intelligence and ability to think.” Then I ask them- “All animals have intelligence. Elephants have intelligence, that is why they work in circuses. Dogs have intelligence, that’s why they are useful in the police department, the dolphin fish has the intelligence of a student in the fourth standard, they detect underwater explosives and help boats to navigate.

Evolution of human mind

So how are only humans intelligent? Keep this in mind, humans came on this earth only in the past five lakh years. The scientific name for humans is ‘ Man the homo sapien’. Actually, the full nomenclature is ‘Man the homo sapien sapien’. Homo means animal, sapien means ‘wise’. So, how did such a weak animal become wise ? Humans developed in the last five lakh years. The ancestors of humans, apes like the gorilla, chimpanzee and orangutan developed in the last 1.5 crore years. The type of animal which gives birth to live babies, and which feed them milk with mammary organs, like the elephant, lion, and tiger evolved three crore and eighty lakh years ago. Approximately 4 crore years back evolved the elephant, which weighs 4000 kilos, and five lakh years ago humans evolved who weigh 60 kilos. So by comparison, whose brain should be larger ? When I ask this question, people start to ponder. Because they know that the human brain weighs between 1350 grammes and 1500 grammes., with a body weight is 60 kilos. This means that the human brain weighs 2 to 2 1/2

percent of the human body weight. But the brain of the elephant weighs just 4 kilos, i.e. just one tenth of a percent, of its weight.

Now the question before us is how did the human brain develop so large in comparison to the elephant's ? If I replied thus- 'Man was God's favourite animal. He sat under a tree and prayed, daily : 'O God, give me wisdom, give me wisdom, and God was pleased and gave man wisdom and thus the human brain slowly increased in size.' – then, all of you would laugh. But you believe in Shree Ganpati. You believe that Gajanan is the god of intelligence. You know that his head is that of an elephant. So, this god of intelligence, then bestowed intelligence on humans and not on elephants- what is the secret behind this? Why did the brain of only humans grow and not that of any other animal? Note that like any other animal, the human is also an animal, and like other animals also has paws. In the course of evolution, the thumb separated from the other four digits. The digits separated into fingers. Man began to interpose his thumb against the other fingers. He converted these ten fingers into a tool, and with this tool started to act on nature around him. Along with, and through this activity, his brain began to develop and grow. This activity continued for thousands of years. Then man picked up a stone from the ground. He gave the stone a cutting edge. He fastened this sharpened stone onto a branch broken from a tree, and created a primitive axe. Later this tool slowly improved. The ability to act on nature enhanced and because of this his brain developed further. Many more thousands of years elapsed. Man discovered metals. He made metal tools. With these metal tools he further improved his ability to act. His brain grew further. Take note, it

was through labour that man began to act on nature, and that developed his brain. Since all animals think, we cannot define a 'human' as 'a thinking animal'. Humans are defined by the statement : 'Man is a tool making animal'. So, in the first place, man is a tool making and weapon making animal, and secondly, though, along with other animals, our ancestors also walked on four legs, later the two legged human evolved. The remaining two forelegs then, evolved into hands and with these hands, he began to act on nature. And when he stood erect, at that time his vocal chords also moved up vertically. The vocal chords of no other animal can match the versatility that the human vocal chords are capable of, and that is why humans discovered language. And through dialogue with nature with human hands, along with dialogue between humans through language, the human brain increased in size. This increase was not due to any rituals or chants of worship, it was not due to any poojas or yagnas. That's why when you fall victim to superstition, what happens ? When you fall victim to superstition, it is no loss to Dr. Narendra Dabholkar, or to the Andhashraddha Nirmoolan Samiti. Whose loss is it? Take note – If I come to your house and after looking around I say "Wow, what a fine house ? How were you able to construct such a large house so soon ? You reply- "Oh, I did not construct the house. It was built by my father. I am only maintaining it. If your mother's friend, eyeing the jewelry she is wearing, exclaims- ' Tell me dear, so much gold jewelry! How could you afford to buy so much at such an young age ?". Your mother replies- 'No, no ! I did not buy them. They were gifted to me by my mother-in-law.' Or she says " They were given to me by my mother as women's

inheritance 'streedhan'. I have to maintain it and pass it on to the next generation. If you conserve and preserve the wealth handed to you from the previous generation as an 'inheritance', then, remember that your human brain is itself the inheritance of 50,000 generations. The 5 lakh year old human fossil skulls found in caves show a cranial capacity of 750 grams. Today, your brain is of size 1500 grams. When you forget this and fall victim to superstitions and blind faith, it is as if you lose your claim to being a 'sapient human' - this is the first thing. But note this- the scientific nomenclature of the humans is 'Homo sapiens sapien'. This means not just 'smart' and, indeed, not 'too smart', but growing always 'more and more smart'. And when did this 'scientific outlook', which has made humans more and more smart, enter our nation? When did it appear on this planet ?

Rational causality

To tell you the truth, in a primary form, the principle of 'rational causality' has been in existence since the time of Buddha and Charvak. But in this modern age and in its modern sense, 'scientific outlook' enters Europe about 400 to 500 years back. We know this as the 'Copernican Revolution'. Copernicus was the first to show, with calculations, that even though it appears that the Sun revolves around the earth, it is really the earth which revolves around the sun. This is what Aryabhat had said, in India, a 1000 years before Copernicus, but we could not sustain this insight, we could not take it forward, we could not give that honour to Aryabhat. Approximately 1000 years after Aryabhat, Copernicus made this statement. He was ignored in Europe.

But then, Galileo was born and in 1609, Galileo invented the telescope. It was an extremely revolutionary invention at the time. Distant ships on the sea appeared to have come nearer. Ambassadors began to report to their Kings, that ‘ this man has made an amazing invention that makes the ships of the enemy appear near when they are far away.’ Galileo was praised. But Galileo had the foolish idea of turning the telescope towards the skies, and started showing the people – “Look folks, I show you- the moon does not have a beautiful face, there are rivers and valleys on it. People, look ! The sun is not spotless- there are black spots on its face. People, come and see. I show you that just as the moon has phases, so does the planet Venus. People, come, see. I show you, that just as the earth has a satellite, Jupiter too has three satellites.” I am sure that of those of you who are listening to this lecture, very few will have seen the moons of Jupiter, or seen the phases of Venus, or the spots on the sun, or the hills and valleys on the moon. This is what Galileo showed people 400 years back, but this time, Galileo was not praised. The highest church authority in Christianity was the Pope. His name was Pope Urban the Eighth. He was a friend of Galileo’s. The Pope was himself a scientist. That Pope ordered Galileo to appear before an inquisition of the Catholic Church. His summons reached Galileo. At that time Galileo was ill, and he requested- ‘I will come when I am better’. But his scientist friend, the Pope, ordered him- “if you do not come, you will be brought here in chains and strapped on a horse- so serious is the crime that you have committed.” So Galileo reached the Vatican. A Christian religious congregation was convened. All the bishops and cardinals were

seated. The pope took his seat. Galileo was produced and accused with two charges. The first charge was “You are a liar”. Why ? Because anyone can see that the sun revolves around the earth yet you assert that the earth revolves around the sun. So, you are a liar.’ The second, and more serious charge was that “You are a blasphemmer.”

Blasphemer, means you deny true religious faith. Religious truth is what is written in the bible, and it is written in the bible that the kind Father has created the sun for producing daylight, and the moon for giving cool light in the night, and for this purpose these two lamps are suspended in the sky. And this is what was taught in Europe till the beginning of the 17th century.

Take note of this, even though there was a considerable spread of science in Europe at the time, nevertheless the words of Aristotle were accepted as authority. It was said, at the time that “Aristotle was the master of all who knows.” Aristotle had given two reasons. One of these was the principle of ‘efficient cause’, namely searching for the causes and reasons. But the second, was the principle of ‘final cause’. And this final cause was the wish of Heavenly God. That is why Galileo was told- what you are saying is against the Bible, and therefore you must apologize. After narrating this episode in my speeches, I often pause, and ask: What is your information? Did Galileo apologize or not? And usually, people reply in all goodwill, Galileo did not apologize. History is testament that Galileo knelt down and unconditionally apologized. He slapped himself on his own face and said “ I have erred. I will not say such contrary things in future. What you say- that is the truth. It is the sun which revolves around the earth.” Today we

teach students from class one that even if it appears that the sun revolves around the earth, in fact it is the earth which revolves around the sun. Then why did Galileo, who proved just the opposite, apologize? This is because just twenty five years earlier, a scientist named Bruno who had made the same assertion, and refused to retract it, was tied to a stake and burned alive to death. So, Galileo escaped with a life sentence. In his last seven years he became blind and he was punished with solitary confinement. Let us think, why did this happen? This happened because Galileo spoke against the religious authorities, that is true. But if we go even deeper and think, we will understand, Galileo was enunciating a new reason and rationality for understanding the universe. Till then, there was only a single reason for the universe- 'It is the will of the lord of the heavens'. And Galileo was now saying- 'Whatever be the will of the lord of the heavens; it may appear that the sun revolves around the earth, but in fact the earth revolves around the sun, and the moon also revolves thus. This has nothing to do with the will of the lord of the heaven.'

Scientific approach

Thinking about real causes, his discovery gave a new direction for discovering the real reasons for what happens in the world around us. What progress could not take place in the preceding 4,99,600 years of human existence, has been made possible in the last 400 years by our discovery of the 'scientific approach'. Now does all this have any relevance for our country, or not ? I believe – all this has a very strong relevance for our country. This is because in our country, in our

religious theology, we have the 'principle of the karma of past deeds'. This principle means- 'Whatever I suffer in this life, is the result of the sins committed in my previous life, and whatever good I do in this life, I will get the benefits in my next life.' Because of this I become completely dependent. The other banks of the world say- Today cash, tomorrow credit, the principle of karma says, 'earn credits today, cash tomorrow.' And as if controlled by a snake charmer's pipe, we accept and admire this principle. And which is the most popular stanza of the 'Geetramayana' sung by Sudhir Phadke? "The sadness in your destiny. Is nobody's fault. The world is enslaved. Son of man. Is neither mother Kaikeyi's fault. Nor Grandfather's. Abdication of a kingdom, Wanderings- all because of Karma. It is the play of my past accumulated doings. The world is enslaved. Son of man. This means, there is nothing that I can do about it. Whatever I have to suffer, it is the play of my fate and destiny and my destiny is decided by the sins of my previous life. Therefore, since I have no way of knowing the deeds of my previous life, there is no way of knowing what I might do in this life and what I will do in my next life.

To tell the truth, the principle of karmic consequences is in direct contradiction to the principles of rational causality. And today also, this is how it is : If a boy studies, gets good marks, and when he goes for an interview, he lands a job in his first attempt- people say, ' Mark it, that boy's stars are good ! Learning, learning, immediate earning !' and if the boy studies hard, gets good marks, the parents were ready to pay something for a job, the boy goes here and there with letters of recommendations from MLAs and MPs, and even so, he does not land

a job for three or four years, then people say- that boy's stars are not good, we have tried everything, but if his destiny itself is bad, what can we do ? And again, suppose- a girl studies hard, passes with good marks, gets shown in good places, and gets chosen in the first attempt, her marriage gets decided with little expense, the relatives will say, "the girl's stars were good, mark it, she didn't cause her parents any difficulty." And, if, on the other hand, the parents despite wearing out the soles of their chappals for three to four years, still have not been able to fix a match, then they will say – she just didn't have it in her stars- we have tried everything, but after all, what to do if marriage was not written in the lines on her forehead.'

Consequence of fate

At college lectures, I often ask jokingly- suppose there are ten of you in a jeep. You go on a trip. There is a serious accident. Nine are seriously injured. You are the only one who isn't. That's your...". And the students in one voice say 'destiny'. And then I say, -"The jeep suffers a serious accident. Nine escape injury. You are the only one seriously injured. That's your..." And again the students answer- 'destiny'. Then I tell them, jokingly- "I hope this doesn't happen, but supposing, in the coming college exams, you get very low marks, and when you go home, your father yells at you - "I slog so hard for your education, the professors take so much pains to teach you, and how is it that you get such low marks ?". And you answer to your father- "Its like this, Dad- it was in your destiny to slog for my education. It was in my professor's

destiny to take pains to teach me, and it was in my destiny to get low marks. It's all a matter of each one's destiny".

On the contrary, it must be kept in mind that- whatever happens in my life- is not the consequence of a god, it is not because of the divine, it is not the consequence of foreordained destiny, it is not the consequence of (praarabdh) fate, it is not because of (sanchit) accumulated merit, it is not because of praktan, it is not the consequence of karmic consequence, it is not the consequence of the merits or sins of previous lives, it is not the consequence of my time of birth. Whatever happens in my life, behind every action, there are real reasons. I can find those real reasons, and because I can know those real reasons, I can also change them.

Scientific attitude

That is why, when you abandon 'scientific temper', at that same time you give the control of your life into someone else's hands. When you accept 'scientific temper', you take the control of your life back into your own hands. And this is what Mahatma Phule has told us one hundred and fifty years ago. One hundred and fifty years ago Mahatma Phule asked - "The Peshwas, who sought the auspicious moment to commence every battle, lost their empire against the English, who never seeking auspicious moments, won battle after battle- how did this happen? And Mahatma Phule also asked "The marriages of our mothers and daughters are decided by matching horoscopes with 36 points, and yet they become premature widows. The white women do not look at any such horoscope and yet they lead satisfied family lives-

how does this happen?” Note this- one hundred and fifty years back Mahatma Phule was identifying the real reasons for wars and widowhood. When two armies face each other in battle, the outcome is decided by the weapons they possess, by their respective fighting morale, by their numerical strengths. It is not decided by the positions in the skies of the planets and the stars, by the positions of the sun, moon and winds. If it were like that, then priests would be enrolled in each army to advise after consulting the panchang, when to commence battle. In Mahatma Phule’s time, six or seven year old girls, and ten year old boys were married in this manner. Savitribai was married at the age of ten, by which time she was being called an overage spinster (ghodnavri). Even today child mortality in Maharashtra is high. At that time, it was extremely high. At such a time Mahatma Phule says- increase the age of marriage and reduce child mortality. If this is done, then even if you do not match a 36 point horoscope, our mothers and sisters will not become premature widows.

This happened 150 years ago,- but believe me- today the situation in Maharashtra is really horrible. Every week I receive a phone call from somewhere in Maharashtra - sometimes from a boy, sometimes a girl, sometimes, the parents – and it is always the same story. My mobile phone rings, and if it is a boy, he asks “ Is this Dabholkar’s phone ?” I say, “yes”. He asks,” Is it you, yourself speaking?”, I say “yes”. He asks, “Do you have some time, I want to discuss at length”. I say “yes, speak. I have the time. This is my business”. Then he says “I am an IT engineer, I have seen a girl and I like her. She is a doctor. She too has liked me. We both would like to marry. My family visited her house.

They saw her family background, food habits, family relations. They found all these acceptable. Thereafter, the girl's family visited us. They too saw our family background, food habits, family relations. They too found it acceptable." After all this has been said, I tell him, "how is this related to me? Go ahead and marry." He says' " Doctor, here is the problem. After all these marriage criteria were decided, one guest unnecessarily took both our horoscopes and showed them to an astrologer. Now that astrologer has said. 'This marriage must not take place. These two horoscopes are incompatible. They are so incompatible, that there is 'Mrityukhadashtak Yog' in them. Because of this, within six months of the marriage, the father of either the boy or the girl will certainly die." Now, if I am giving a lecture in a college, I ask the students- "If this is told you, what will you do? Will you marry or not?" I also tell them – "Have faith in me, go ahead and marry. Nothing will happen to your mother or father, I am prepared to write this on a bond paper. The simple reason is that it has been undisputably established that there is no ground whatsoever for predicting the course of my life on the basis of a horoscope. That is why- by not making a decision about 'whether or not to marry a girl that I like' on the basis of a horoscope- this means taking control of our life in our own hands.

That is why scientific attitude gives you a new understanding. Have you heard this famous 'shair'? "Khud hee ko kar buland itna, Ki har takdeer se pahle, Khuda bande ko khud pooche Bataa teri razaa kya hai?" "Build yourself so strong, that even that all-knowing God, before writing every word of your destiny, Himself will be compelled to ask you, Tell

me, what is your wish?" In short, scientific attitude is a way of viewing life, of achieving success, and of becoming a better person. If we adopt this world view, we can bring about fundamental change in our life, in our collective lives, in the life of society and even in the life of our country. That we all resolve to bring about this kind of change- this is my earnest request to you.

The human species appeared on earth some 5 lakh years ago and tigers arrived approximately 40 million years ago. When humans evolved, they too, like tigers, lived in caves, ate raw meat, wore no clothes on their bodies. So, what happened thereafter, that tigers still live in the jungle in the same way, while humans have made so many revolutionary discoveries? Humans were posed with many problems and the differences between humans and tigers began to widen. After feeding on his prey, and relaxing under a tree at night, the question never occurred to the tiger while looking at the sky as to where do those innumerable twinkling stars come from. This question occurred to humans. During torrential rains, it never occurred to the tiger to ask, where does this rain come from, and why does it stop raining? But it did occur to humans to ask- sometimes it rains and sometimes it does not, and what could be the reason for this? What is beyond that hill that we see? What might be beyond the sea? This means that humans began to think, out of curiosity or out of a sense of nature's mystery. Scientific attitude grows out of curiosity and a sense of mystery, and gets established through the process of observation(*nirikshan*), reasoning(*tark*), inference(*anumaan*), experience(*prachiti*), and experiment(*prayog*).

As much belief as there is evidence for

Now before going into details about what defines scientific temper, to explain in simple language, if one has to say in a single sentence, what is scientific temper, then this is it – “As much belief as there is evidence for”. This means that we use scientific temper ourselves to live our daily lives. For example, you want to go to Armori, you are posed with the question- ‘Where in Gadchiroli district is the village of Armori located, and how to reach there?’ So you ask someone ‘Tell me, I have to go to Armori and how do I get there?’. To which he replies- ‘ You go thus, this way, you will reach Armori’. To which you ask, ‘How do you know?’, He replies- ‘Six months back I had a dream about going to Armori, and that’s how I reached there’. And then you asked the same question to another person, and he replies ‘ If you go thus, and thus you will reach Armori.’ And you ask him ‘How do you know?’ And he says “Two months back I was at the ST bus stand, and I overheard somebody telling his companion that this is the route by which he had gone to Armori. I am telling you what I remember now.” So you ask a third person what is the route to Armori and he tells you another way. And you ask him ‘How do you know? He replies “ A month back, my friend went and returned from Armori by this route.” And then, when you ask a fourth person the way to Armori, he replies giving details of the entire route. And when you ask, this is fine, but how did you know that this is the route to reach Armori?, to which he replies “ I had some urgent work to do at Armori, and so four days back I went to and came back from Armori by this route.”

Now you tell me, for going to Armori, out of these four versions which one would you consider most believable and which one the least? You would least believe the man who had visited Armori in his dream six months back. The person who heard someone narrating to his friend the route at the bus stand would be more credible. You would have more faith in the person whose friend had actually visited Armori, as compared to the second, but still with some doubts. But the person who himself had visited Armori by a definite route, you would believe him the most. Which means “As much belief as there is evidence for”, this principle which we employ in our everyday practice, this is the core of the ‘Scientific attitude’.

Observation

But as I was just telling you, observation, reasoning, inference, experience and experiment- these are the basis on which the scientific method functions. Now what is meant by ‘observation?’ Lets look at an example. We celebrate February 28th as National Science Day. This is because this was the day that Raman, who received the Nobel prize for his ‘Raman effect’, published his world class discovery in the scientific journal ‘Nature’. But what is the incident which is behind this discovery? C.V.Raman was on his way to England by sea. Of course, it took two to three weeks to reach England. Every morning and evening Raman would stand on the boat deck. He would look at the deep blue sky above. He would see the deep blue ocean below. Now, it was possible for him to feel thus: “O God, you are so great! How beautiful is your sky above. How beautiful is the sea below”. But instead of saying “God, how beautiful is your sky’, he asked, why is the sky deep blue above,

and also deep blue in colour below? The 'Raman effect' was born in this observation. Or else, we are told about the industrial revolution that took place in Europe, that James Watt was deep in thought. Next to him tea was boiling in a kettle. There was a lid on the kettle. A little later the lid fell off. James Watt picked up the lid and put it back on the kettle. He went back to his work. Again, a little later the lid fell off. After this had happened two or three times more, James Watt did not start thinking "There must be some ghost inside the kettle which is repeatedly throwing off the lid. He started thinking, 'What is there in the kettle due to which the lid I keep on the kettle is repeatedly thrown off?' And so, the power of steam was discovered. The steam engine was introduced into Europe and the Industrial revolution took place in Europe. That was the beginning of the scientific outlook, with observation.

But everything cannot be observed. Suppose you went into the jungle and lost your way. It is evening. You have to find your way soon to some human habitation. There are violent wild animals in the jungle, and you do not know in which direction you should proceed to reach a human settlement. At such a time you climb a tall tree. In one direction you see a big cloud of smoke, in another you see about 11 or 12 small plumes of smoke. You climb down from the tree and start walking in the direction of the 11-12 plumes of smoke, and after some time you reach a human settlement. Take note, you have not seen the settlement. You have not seen the huts. You have not seen the lit hearths. You have not even seen the inhabitants. All you saw was smoke. You did not go in the direction of the big cloud of smoke. You went in the direction of the many small plumes and you reached the settlement- how did this

happen? This happens because when wood is lit there is smoke- this you know. There are two reasons for wood to be lit in a jungle- first, there could be a forest fire. When there is a forest fire there is a huge cloud of smoke. That is why it is not a smart idea to go in the direction of the huge cloud of smoke. Second, humans burn wood to cook their food. In the evening they cook their dinner. Humans cook their food in their own separate huts. That is why there are many small plumes of smoke. That is why, you reason that there is a settlement with some 11-12 huts, it is evening and people are cooking their dinner. Which means, what you could not observe, you concluded by reasoning.

Reasoning

Now let us take a typical example of inference. Suppose your friend came to you and said to you. 'These days it is very pleasant. Tomorrow morning I will come at sunrise and let us take a walk together.' Now you know your friend too well, and you know that he never wakes before eight am, and so you tell him, 'Stop telling tall stories, you know that you never get up before eight, and so where are you going to come at sunrise to take a walk with me?' But will you say this to him? - "Tomorrow at sunrise you will come for a walk, but are you sure that the sun will rise tomorrow?" Now you are sure that the sun will rise tomorrow, because you know that ever since the earth was formed, some 460 crore years ago, every morning the sun rises at the appointed time. In 460 crore years, the sun has taken not a single day's casual leave. Because if the sun took a single day's casual leave, we would all take permanent leave! Therefore, whether or not I will be here tomorrow may be a difficult question to answer, but whether or not the

sun will rise tomorrow is answered on the basis of a inference which is not in doubt. In the way that the sun has risen every day at the appointed time, in the same way, 'that the sun will rise tomorrow at the appointed time' is a highly likely inference.

Experiential evidence

Observation, reasoning, inference- the fourth aspect is experiential evidence. To understand this let us look at an example given by Adi Shankaracharya. He has written thus : If 100, or 10 learned men come to you and started telling you 'We have come to tell you that fire is cold', you will not accept this. If they tell you 'We have brought with us a library of books, and we will show you 100 books in which it is written that 'fire is cold'. You will say to them " You are learned. I respect that. I respect the books that you have brought. But my experience tells me that when I touch fire, I am burned. Therefore my direct experience is more important than the authority of your words or the authority of your books. This is what we call experiential evidence. What kind of experience? It should be universal and repeated experience. So, if your friend comes to you and tells you- 'There is a baba who has come to our village, and he has some magical rings. If we give him a thousand rupees, then he gives us a ring, and if you wear that ring you definitely get a job. Not only did I land a job, but my neighbor also got a job. At such a time what should you tell him? If you are following the scientific approach, you should tell him- there are 1000 unemployed persons in our village, and if all of them give him 1000 rupees each and wear his ring, and if at least 80 percent of them get jobs, then we can accept there is some power in those rings. And even then we will not fully

accept this. Because nearby the village a large factory has come up and there is a possibility of large scale employment. Now if those magical rings result in employment, in any town or village anywhere in the country, 80 % of a thousand persons wearing those rings must get employment. Only then we will call it experiential evidence, because that experience must be universal and repeatable.

Now the last point is experiment- whatever is to be proven, should be proved by rigorous experiment, and this experiment must be valid anywhere. For example, water boils at 100 degrees centigrade. For definite reasons, the boiling point of water may rise or fall. No matter where you are, this truth is what is observed. America is consumerist, therefore water there does not boil at 95 degrees centigrade, or Varanasi is spiritual, so water there does not boil at 105 degrees. Results obtained by performing experiments are the same everywhere. In summary, a proposition based on reasoning, which is further confirmed by observation, testing, rigorous logic, mathematics, direct experience and experiment, is then accepted as a proposition which is scientifically validated.

To tell the truth, we should call this proposition 'a proposition which has been established by the scientific method.' I am consciously distinguishing between 'the scientific method' and 'the scientific temper'. Scientific method is what I have just described to you. In English, the steps of this method are given as – observe, arrange, question, synthesize, generalize, make hypothesis, verify, conclude and induction or deduction; but when we link the scientific method with values 'scientific temper' is constructed. What are these values? These

values are autonomy (*swayattata*), comprehensiveness(*samyakta*), fearlessness (*nirbhayata*), modesty (*namrata*) and inquisitiveness(*shodhakata*). The path of scientific temper is dependent on the adoption of these five values in our life. The first value is autonomy. Autonomy means that this universe exists as an autonomous causal entity. This means that if we propitiate some benevolent power nothing beneficial in the universe happens on its own as a result, and if we offend some malevolent power, nothing bad happens on its own as an outcome. Whatever happens in the universe is the outcome of autonomous causality and we can seek out the causes. Once we accept that the universe is autonomous and functions according to autonomous causality, then there is no need to bow your head to any supernatural power which controls your life.

Comprehensiveness

The next value is comprehensiveness. What is comprehensiveness? If I give you an example, we will recognize it more precisely. Some years back, till July end it had not rained in Maharashtra. There was a tremendous possibility of drought occurring in that year. The governor of Maharashtra at the time appealed to people -“ Everyone should pray to their gods that it will start raining”. The Governor made the appeal, so the Education Minister made the same appeal. The Education minister appealed, so the Director of Education issued the appeal. The Director of Education appealed, so the District Education Officer did likewise. Thereafter, the Headmasters did likewise. So, children in all schools and staff of all offices came outside and prayed “Hey God, give us rain and end this drought”. At that time, we brought out a leaflet

which stated “This is an insult to the tradition of reformers of Maharashtra.” Now was this correct or wrong? Anyone of you may ask the question - when we are in distress, we seek the assistance of the Gods. Having sought the assistance of the gods, whether or not we receive it, it does not matter. But when someone in the house is seriously ill, when medicine is not working, at that time we bow to the gods and say ‘O God, You alone can save us from this’. So, in the face of such a serious drought situation in Maharashtra, how is it an insult to our traditions of reform to beseech the assistance of the gods? We too were asked such a question. Now here it must be stated emphatically that Maharashtra has a very big tradition of social reformers and the message of these reformers in one sentence, nay in one phrase, is ‘justification by reasoning’, or ‘scientific outlook’. The droughtlike situation which developed in Maharashtra, was it due to the shortfall in rain, or was it due to something else? We must think about the fact that in Israel, in the desert there is 4 to 5 inches of rain and yet the farmers of Maharashtra go to Israel to study the agriculture there. The records of rain fall in every Taluka of Maharashtra for the past 100 years are available and in no year has there been less rain than 10 inches. And certainly not on the average. Now if it rained 8 to 10 inches of rain in Maharashtra, and in that year, by 31st July if that much rain, in proportion, had fallen, and if we stopped, soaked and conserved every drop of that water and utilized that water rigorously, then there was certainly enough water for one crop, with enough left over for the necessary requirement of the second. For this the basic principle of ‘stop and conserve’ needs to be implemented. This has been proved in many examples in Maharashtra. Pratap Borade has proved this in

Marathwada. Anna Hazare in Ralegan Siddhi. In Ahmednagar, Popatrao Pawar has proved this. This means that even though Maharashtra gets sufficient rain, if there is a slight decrease, if we start invoking the gods it's not proper. The crisis of water is not heavenly, but man made. It is the result of the incompetence of the politicians. It is not the result of the cruelty of nature. It is important that we must look at any question autonomously and comprehensively. But the connection between two factors is not always apparent. For example, the education department made the dissection of frogs a compulsory part of the 10th and 12th standard curriculum in Maharashtra, and the output of rice in Konkan declined. Now, perhaps you will find it amusing to relate these two facts together. What can be the connection between these two facts, you may wonder. It is this, there was a big requirement of frogs for dissection. Large quantity of frogs were supplied from Raigadh, Sindhudurg and Ratnagiri districts to other places. Frogs eat the insects and worms which feed on rice.. The decrease in frogs resulted in an increase of insects. Naturally the output of rice decreased. That is why, for "Why was there a decline in the output of rice" the reason could be "The change in the curriculum of the education department of Maharashtra." Therefore we should be able to see all these interrelationships comprehensively.

The third extremely important criterion of scientific outlook is inquisitiveness, the spirit of inquiry. Which means you must constantly be asking questions and looking for things. Very often during lectures I tell a story and ask a question. There was a country called Sicily. In the darbar of its King there were many pandits. One day, in the presence of the full darbar the King asked the pandits : "If we put a live fish into a

flat vessel filled up to its brim with water, why is it that no water spills out, while, if we put a dead fish into the vessel water spills over? And with this I ask you a second question : “If I keep water in a red matka and also in a black matka, why is it that the water in the red matka is cooler than the water in the black one?” I ask these same questions in many schools and colleges. Then after pondering over the questions, some children answer: ‘The live fish consume oxygen and that is why water does not spill. The live fish swim on the surface, the dead fish sink to the bottom. Some say, the black matka absorbs more heat. That’s why the water in the red matka is cooler. Then I say this: “You should have asked me – who has seen this?” And then everyone laughs. Take note, if you put either a live fish or a dead fish into water, then as much water is displaced as the amount of the volume of the fish that is under the water and that much water will spill. It matters not at all that the fish is alive or dead. Nor does the coolness of water depend on whether the matka is red or black. What matters is how porous is the material of the matka. That is because of the evaporation of water passing through the porous material removes the heat and cools the water inside. Without questioning this, without observing this if we just accept what is told to us as being true, this is against the scientific outlook. That is why you must have autonomy, integral approach, inquisitiveness, and modesty.

Modesty

Scientific temper is always modest. Religion was never and is not modest. ‘What I know is the ultimate. What I know should not be questioned. My answer is infallible. Your only option is to implement it.

Questioning my answer will be seen as a serious act of disobedience.' All this is told by religion. Science only says 'Based on the evidence which I have at this point in time, this is true to that extent. If tomorrow, there is some other evidence, then some other truth may be established.' Science never claims ultimate truth. Science stands on the persistence of truth, and on the other hand, religion stands on 'ultimate truth' and 'the finality of the given word'.

Fearlessness

After this, the most important criterion of science is fearlessness. Agarkar has said, 'It is not enough to advance knowledge. We should be able to act fearlessly upon it.' Eighty years ago, in Maharashtra, a great man came on the scene, who had clearly recognized the crisis which would be faced eighty years later. He would say 'O people, our population which is growing without limit is a big crisis for our country. That is why you must quickly adopt family planning'. Family planning is now recognised as essential for the welfare of the country by all countries, including India,. The man who said this 80 years ago was no ordinary man. He was R.G. Karve, the son of Bharatratna, Dhondu Keshav Karve. At that time, people called R.G. Karve insane. There were many cases filed against him. As a result R. G. Karve had to face defamation on many occasions. Despite this, R. G. Karve firmly reiterated his position, which today after 80 years is accepted by society. That is why you can adopt the scientific attitude with observation, reasoning, inference, experience and experiment, but along with these the life values of autonomy, comprehensiveness, spirit

of inquiry, modesty and fearlessness are also very important in order to inculcate in yourself the scientific temper.

Cultural inhibition

Now the question arises as to why the scientific temper did not take root and spread in India. It is true that there was a time when we had scientific temper in India. There were universities of international standard universities in India at that time at Nalanda and Taksashila. Buddha, and before that Charvaka and Lokayat had enunciated rational reasoning at that time. In the fifth century Varahamihir took birth here. He had stated that the Sun is a star. After that there was Aryabhat who had said, though it appears as if the sun moves round the earth, it seems to me that it is the earth which moves around the sun. Zero was discovered in India, and due to this a big difficulty was surmounted for the mathematics of the world. A surgeon of extremely high caliber like Susruta arose in India. He planted the seeds of plastic surgery. All this was there in our country, but from the seventh century AD till the 18th century AD, that is for one thousand years, there was a dark age in this country. Nehru, in his 'Discovery of India' has written about this period in these words: 'There were many fine Kings, there were many fine philosophers, there were many fine saints and social reformers, but there was no scientist.' It occurred to no one to ask 'Who are these Mughals? Where have they come from? What is their strength? Where are they vulnerable?' Instead, 'This is our fate, and there are ups and downs in destiny. Today our destiny is at a low point and tomorrow sometime it will rise.' - this kind of thinking held our country back for a thousand years. That is why - "Who will sit with

whom at the lunch (*pangat*)?, Who will not sit in that *pangat*?, Will the smear be applied in horizontal lines or vertical lines?, Should we eat or not eat onions and garlic at the time of Chaaturmass?, How many turns in the holy thread? ‘Will a flick of the cow’s tail to our face confer holy blessings’?, or If we drink cow urine will we have direct access to heaven?”, on all these questions, there was debate and discussion in our country. For all these reasons, for a thousand years there was no conducive mentality in the country for the development of scientific temper. If we take a review of this period, we can learn something and we can change things.

In the first instance, in our culture questioning has no prestige, and there is no habit of inviting questioning. Children have thousands of questions. A boy asks his teacher- ‘Guruji, tell me why does the sun look red at sunrise and at sunset? He asks another teacher, ‘Miss, why do fireflies glow at night?’ ‘Guruji, from where do the colours on butterfly wings come from?’ ‘Miss, why are there high tides and low tides in the ocean, and why are there waves in the ocean?’ And both the Guruji and the Miss have answers to all these questions, but they answer in just three words ““*Kartya*, keep quiet”. And that too, how? “*Kartya* keep quiet! Like a god. Hands folded. Finger on the lip.” In a community in which God teaches to keep silence, in such a community we have to teach people to ask questions. A very senior scientist from Maharashtra narrates his own experience. He had gone to England to study. He took his daughter along who was then studying in class four. He enrolled her in school there. ‘How will my daughter accept that education’ was a question which worried him. Once he met his daughter’s teacher. The scientist asked- how is my daughter doing in

her studies? The teacher replied, 'Your daughter is very intelligent, but there is a big problem with her'. The scientist's heart skipped a beat, he asked, 'what is the problem?' Teacher continued. "Don't be afraid. This problem is due to your education system. The problem is that your fourth standard daughter does not ask any questions. But when you return in a year, by that time your child will have started asking questions". In schools abroad, the dictionaries and encyclopedias which are given to children at a young age are titled "Tell me Why". That is why, knowledge begins with the question 'Why', and from the very beginning we discourage children asking this question. I tour Maharashtra. Two months back I went to a household. The host was an MSc., B Ed., and she taught science in a school. She had a daughter aged 3-4 years. This child was very active. So I praised her. The lady said 'Doctor, don't praise her. *Karti* is very talkative.' I said, 'OK, so what?' She said, "Look here, I have to do all the housework. Go to school. Take lessons. Take the children's practicals." Now every working woman has to do all this. So I said to her, "So what? What is the connection of this with the girl's talkativeness?" She replied "That is what I am telling you. Last week I was in a hurry to go to school. I took her to the bathroom to bathe her. While I was bathing her the girl asked "Two months back you bought a Jai soap. Then 15 days back when that got used up you bought a Lux soap, and yesterday, when the Lux soap was used up you bought a Hamam soap." But I could not understand. I asked her so what? The lady said "Aho, doctor, I was in a hurry to leave for school, and this little girl is stubbornly insisting on an answer to her question while bathing, that "Two months back the Jai soap was pink in colour, the Lux soap after that was blue in colour.

Now the Hamam soap that you have brought is green in colour, but why is the foam produced by all the soaps white in colour?" I said, "What did you do?" To which she replied "What else? I gave her a slap on her cheek and went off to school". So see what we do. Children try to make sense of their surrounding reality with curiosity and we tie them down to school science education. In such a society, it is a difficult work to spread scientific temper.

Authoritarianism

A second reason for why scientific temper has not spread in our society is the authoritarianism in the family. In today's society if a question is asked in the family- even a small, simple question to the mother, like : 'Mother, can I go to the cinema?', Mother, should I buy this book?', or, if the daughter asked, 'Mother can I go on the trip?', or if the son said, 'Mother, I want this kind of trousers. Should I buy it?', then to such questions, the mother's reply is already decided "Just wait a bit, till he comes home, then we will decide." Which means it is generally accepted that in every household there is some all knowing supreme person named 'He', who has all the correct answers, and due to this there cannot be free discussion among the family members. We have a saying "Baladapi Subhashitam Grahya". This means "We should accept an epigram even if uttered by a small child". That there should be dialogue in the family does not imply chaos, but we should listen to the opinions of everyone in the family. Today the facility with which a 10-12-15 year old boy uses a computer cannot possibly be matched by his father. This is because this is the language of his generation. This is

why the authoritarian family is a second obstacle in the spread of scientific temper.

Deification

Thirdly, in Maharashtra today, a new difficulty has been created. I am referring to the deification of great persons. We have become extremely sensitive about all those whom we consider great. If anything critical is uttered about a great person, it is considered by his followers as if it were an insult to him. What I am going to narrate is something which happened about 15-16 years back. There is a book titled 'Bandh-Anubandh' written by Kamal Padhye. Her husband was Prabhakar Padhye, himself a well known, famous Marathi writer and journalist. In this book Kamal Padhye has written that Dr. Ambedkar had once attended a private classical music performance, and it appeared to both her and her husband that he did not understand anything about classical music. After a short while Dr. Ambedkar had left the performance. Kamal Padhye's opinion may be right or it maybe wrong, but it was her judgement that Dr. Ambedkar did not understand classical music. Now everyone knows why Dr. Babasaheb Ambedkar is considered as a great person, a great human being. His greatness has nothing to do with whether or not he understood classical music. But after expressing this opinion about Dr. Ambedkar, Kamal Padhye had to face a lot of criticism from many people. "How could you ever make such a statement about Dr. Babasaheb Ambedkar?", she was asked. Like this we generally have deified or glorified great personages. This is why in today's social circumstances it is day by day becoming more difficult to express a critical opinion.

The fourth obstacle in the spread of scientific temper is the tremendous hold of ritual tradition on our common people. When we see the extent to which the 'Vatsavitri' pooja is observed today, even among the highly educated, one is taken by surprise. What has Swatantryaveer Savarkar said about Vatsavitri pooja? "As long as it is standing upright the vad tree gives shade to those who sit under it. The same tree may crash and kill those sitting under it if it is diseased. If that tree cannot understand whether to give shade or whether to fall upon and kill those sitting or lying under it – to worship such a tree for one's own mental wishes is to worship untruth." Though "Truth shall prevail" ('*Satyameva Jayate*') is the motto of our country, 'Behave untruly' ('*Asatyme vartate*') is our conduct today. What do we do with continuing rituals of yore? We break hundreds of thousands of branches of the Vad tree, saying 'Long live the environment', bring those to our houses and worship them, women praying for the same husband for the next seven lives. Now one teacher started telling his fellow women teachers the internal contradiction in all this. They were all checking the primary school papers, chatting among themselves. He said, 'Mark this, the fast that you observe at Vatsavitri is good to shorten the lives of your husbands!' Naturally, this angered the women teachers. They said 'If you don't have faith in this you don't believe it, but we will not accept you saying this to us, this is our religious feeling. That we may have the same husband for the next seven lives, and that he may have a long and healthy life is our prayer during this fast.' To which the teacher quietly replied, 'This is exactly why I say that you keep a fast for an early death for your husband.' Naturally the teachers were enraged. So, the teacher quietly continued, 'You know that our

husbands are generally older than their wives by a few years'. 'Yes, that's correct' said the women teachers, 'If at the time of marriage, the girl is 22 years old, then the boy should be about 26 years old. A difference of four years between the bride and the groom is desirable.' So, continued the teacher, if you want the same husband in your next life, and he does not leave four years earlier than you, then how will he go into the next life before you and be older than you in your next life. Now this kind of argument may be found amusing by those who observe fasts, but it is the experience of Maharashtra that in the past ten years, the practice of observing the 'Vaibhava Mahalaxmi' fasts has spread like the waters of a flood. Whether they are highly educated or illiterate, whether in cities like Mumbai or small villages, the women observe the *Vaibhav-mahalakshmi* fast on Thursdays in *Margasheersha*. For this vow they break the branches and leaves of trees, after which they put them in water bodies and pollute them, and believe that 'because we have observed the Vaibhav-mahalakshmi vow, we will achieve prosperity'. To expose all this, we make efforts through the Andhashraddha Nirmulan Samiti, but if we are to mentally reject such practices, then it is important to accept the scientific outlook. That is why, along with the habit of not questioning, authoritarianism of the family, glorification of the great personages, and the hold of ritual tradition, in addition to these four factors, there are another two important reasons why the scientific temper has not taken root in our country.

In our country today also we have 'brahma' and 'parabrahma' - a mix of '*brahma*' and '*parabrahma*'. This is what gives our life a meaning. Brahma and Parabrahma are the only truths, and all else is illusion.

This is what is still taught. This is exactly what is told to us by all the babas, buvas, so called saints, mahants, pravachankaars. Brahma has not been seen by any one of them. Parabrahma has not been seen by them. What they call 'illusory', however, that real life - has to be lived every moment by each one of us. But by what method was this kind of mentality brought about in this country? In this context, we may all know this story. A guru is sitting in the jungle teaching his students. He tells them " Say *Ahom Brahmaasmi. Brahma satyam. Jagana Mithya.*" Which means, "I am Brahma. Brahma is true, and the world is false." Guruji tells his shishyas to chant what he has said. The students repeat the chant. At this moment Guruji sees a mad elephant approaching towards him. Guruji bundles up his manuscripts and climbs up a tall tree. Along with Guruji, the students also flee the venue. The mad elephant arrives, creates a mess of whatever is there and leaves after a short while. After ascertaining that the elephant is sufficiently distant, the guru descends from the tree. He opens the pages of the manuscript. The students return to their places. The guruji tells them, start your lesson, and repeat after me "*Ahom Brahmaasmi. Brahma satyam. Jagana Mithya.*" Among the students, one lad is a little smart. He says, "Guruji, May I ask a question?". "Yes, Ask!". "If the world is an illusion, then why did you flee when the elephant arrived?". Now Guruji is even smarter than the boy. That's why they ruled for 2000 years. The answer given by Guruji is thus : "*Gajopi mithya, palayanaapi mithya*". Which means, "That the elephant came, this is an illusion. That we ran away, is also an illusion". The world which we have to study as a basis for developing a scientific outlook - if it is taught that this world is itself an illusion, then scientific outlook cannot grow here.

Caste system and the patriarchal system

The most important reason why scientific temper has not grown in our country is the caste system and the patriarchal system. Due to this you have excluded 50 percent population – women - from education. You excluded most of the castes from education. Those who learned, learned only the traditional knowledge of their caste, and only a handful learned the Vedas. There was no development of formal knowledge in the Vedas. So, in our country, if 96-97 percent of the people were denied access to formal knowledge, and if the remaining 3 percent considered philosophical dogma as knowledge, then it is not surprising that we were left 1000 years behind. This is because we know that there was a time when in this country science was highly advanced. There was extremely prosperous trade with Europe. Textiles and spices of very high quality found their way to Europe from this country. All this more or less ceased in the intervening 1000 years. Because of the absence of scientific outlook, not only did our country fall behind, but we came under foreign domination. Because of the lack of scientific outlook, going to other nations across seas was stopped. Of what Savarkar calls the six golden chains, this was one, the ban on sea travel. Sea travel was stopped, so Vasco-da Gama was told by his King and the traders 'Go and find a route to that country of India. Earlier, traders used to come from that country. They used to bring extremely good quality silks. They would bring spices. Those were really profitable.' So Vasco da Gama came to India. Later came the Dutch, the French and the British. The British first came for trade. Then they came with some soldiers. Then they took away our independence. This means, that because of our lack of scientific outlook we lost a lot. We

fell behind in the world. We have accepted a kind of foreign domination. That is why scientific outlook did not take root in our country.

Scientific outlook

For scientific outlook, all these things are necessary : dispelling the unquestioning mindset, eliminating family authoritarianism, stopping the glorification of great personages, loosening the hold of rituals and traditions,, engaging with reality rather than speculating on maya and brahma, and rejecting caste and gender discrimination. While doing all the above mentioned things, what must yet be done with scientific temper was articulated by Pandit Jawaharalal Nehru, while placing the science policy in the Lok Sabha. In very few countries has such an official science policy been formally tabled in Parliament. These are five points from that speech delivered by him: ‘Scientific Temperament is a process of thinking, a method of action, a search for truth, a way of life and the spirit of a free man.’

What is the scientific attitude? It is a process of thinking, it means observation, logic, inference, experience, experiment. But is it only a process of thinking? No. It is a method of action. What you should do, which action will be correct and fruitful, this too is what scientific attitude tells us. But is this all? No. It is a search for truth. What is true, and the process of discovering what is true is what scientific temper teaches us. But is this all? I feel that the last two sentences articulated by Pandit Nehru are extremely important. It is a way of life. It is the spirit of a free man. This means, how I should live my life, or my social life, this giving of a direction is done by scientific temper. This is why the well known Indian scientist Yashpal states, ‘Scientific attitude nurtures maturity of judgment.’ Many problems of this country are due to the absence of a maturity of judgment. If through scientific outlook a

maturity of judgment can be enhanced in the common man, he would be able to seek his own solutions to the problems of his life. When I said all this at a study class for police officers in Jalgaon, one Dy. SP level officer stood up and said - " Doctor, till now you were speaking a simple language, but now when you say 'Scientific outlook give rise to maturity of judgment. Many problems of this country are due to an absence of maturity of judgment and if through scientific outlook we can enhance the maturity of judgment of the common man, we can better solve the problems of this country.' - I don't understand what you mean. Please explain this to me." I said "OK. That's fine. Have you have heard the statement that 'By the year 2020, Bharat will be a superpower?', 'Yes'. 'Tell me, Bharat becomes a superpower by 2020, then what will happen?' He thought for a while and replied, 'Today we have the atom bomb. By 2020 we will have the hydrogen bomb.' Then I asked the same question to another officer, and he too applied the same logic and replied 'today we have missiles with a range of 300 km, by 2020 we will have missiles with range 1200 km,' Then I asked a third officer the same question. He replied 'Today we have Chandrayaan. By 2020 we will have established a colony on the moon.' A fourth officer replied 'Today, we are number six in the world as regards technologically educated human resources. By 2020 we will be number two, and Bharat will become a superpower.' After hearing all this I asked, 'Today, in one indicator, Bharat has been declared number one in the world, by the World Bank at the beginning of the 21st century, and there is little possibility that it will become number two in the near future- do you know in which respect?' When I ask this question very often I get the reply 'population'. But the World Bank had announced in 2001 that, 'India will have 54 % of the total illiterate population of the world when it steps into the 21st century.' When the whole world steps into the 21st century, Bharat will have a distinct place. What distinction? That out of the 600 crore humans on this

planet, Bharat will have 54 % of the total number of illiterate human beings, and the rest of the world will have 46 %. Now we should think, a country that can make the hydrogen bomb, cannot it make all its citizens literate? Even today out of 1 lakh newborn babies, 500 die at the time of birth. This is higher than our neighbor Bangladesh. So this country which makes intercontinental missiles, cannot we stop the extent of mortality of our mothers and sisters during deliveries, which is more than that of little Sri Lanka? Come January, and in 3 lakh villages in our country, our sisters have to trudge three-three kilometres for bringing one vessel filled with water, and waste three hours of their time. A country which will build colonies on the moon and is number two in the world in technical manpower, cannot it bring the facility of tapped water to the houses of our mothers and sisters? Now think, why is it that any of these questions never becomes an election issue? This is because many of these questions have become problems because of an absence of maturity of judgment, and this lack of maturity of judgment is due to the absence of scientific temper. This means, that with scientific temper, if maturity of judgment is developed in our common citizens, then the common man will think foremost about his own problems of unemployment, his own problems of health, about his own problems of education, and he will be able to transform his own life.

Only scientific temper can provide this strength to the common man to transform his own life, which is Nehru's fifth sentence: He says "Scientific temperament is a process of thinking, method of action, search of truth, way of life, and the last important sentence, it is the spirit of a free man. Today, in a democracy we express our self-consciousness in the election process. This self-consciousness sometimes surrenders to religion, sometimes surrenders to caste, sometimes surrenders to muscle power,

sometimes to money power, and because of this it becomes corrupted, it becomes weak. If you want to preserve spirit of free man in a permanent, fresh, vigorous and effective state of health, then an inoculation of scientific temper is compulsory. If you are inoculated with scientific temper once in your life, then your 'spirit of a free man' will remain permanently strong. That is why scientific temper and a healthy democracy are closely related. That is why with the 'eradication of superstition' we begin to promote scientific temper, and this scientific temper takes us towards building a healthy, capable, democracy in our country. I myself believe that if we take to mind all these matters in a comprehensive manner, then they will certainly enable us to change our lives and transform our society.

<https://aipsn.in/node/6> & <https://aipsn.in/node/9>